REMARKS

Applicants' counsel appreciates the courteous telephone interview with Examiner Flores and Supervisor Harvey on December 3, 2007. During the course of the interview, the invention, the prior art and a proposed claim amendment were discussed. At the conclusion of the interview, Applicants' counsel offered to submit a formal response with the proposed claim amendments.

As discussed during the course of the interview, Applicants' invention relates to an improved method of attaching a heat sink to a multilayer gain structure. The method is of the type known in the art as optical contact bonding. As noted in the specification at page 10, line 13, this approach includes insuring that the opposed surfaces are very clean and very flat. In this manner, they may be pressed together very closely in a manner so that atomic bonding can occur (van der Waal forces). Preferably, the assembly is annealed to improve the shear strength of the bond.

In the Office Action, the Examiner rejected the bulk of the claims as being obvious based on Salokatve (6,327,293) in view of Bewley (6,448,642). There is no dispute that Salokatve discloses the basic structure of an optically pumped semiconductor (OPS) laser where the heat sink is bonded to the semiconductor structure using an adhesive.

Bewley was cited for its teaching of a pressure bond between a semiconductor and a heat sink without an adhesive. At column 3, line 28, Bewley states that the pressure is applied in a manner indicated by arrow 23. The Bewley patent does not provide any particular detail about his bond. However, Bewley states at column 9, line 41, that the "bond is in no way permanent. When the pressure is removed, the materials separate, without any damage to either surface."

During the interview, Applicants' counsel also discussed the Bewley's Applied Physics Letters article (of record herein) which explains his pressure bond. More specifically, in the article, Bewley states that the "bond" is "created solely through the application of pressure, which was exerted from the back by a chisel-pointed screw" (page 1075 left, column). This sentence explains why Bewley's bond is not fixed and that the parts will separate when the screw is unscrewed.

Applicants have amended the independent claims to more clearly distinguish over Bewley. More specifically, the claims now specify that the heat sink is pressure contact bonded

in a manner **to remain fixed** without adhesive **after the pressure has been removed.**" As noted above, this structure is exactly opposite to what is disclosed in Bewley.

During the course of the interview, the support in the specification for the proposed amendment was discussed. As noted by Applicants' counsel, the exact words added to the claims are not expressly present in the application. However, one skilled in the art would be quite familiar with the results of optical contact bonding ("Standard optical contacting methods are used, well known in the industry" page 10, line 18). Further, this same paragraph teaches that the elements should be annealed at high temperature. As noted above, annealing improves the shear strength of the bond. If the bond were not fixed, there would be no need to anneal the bond.

Still further, the above-cited paragraph discusses how the contact bond approach might be used to bond chips and heat sinks on the wafer scale (multiple OPS chips, multiple heat sinks). In such a case, after the bonding is completed, the contacted structures are "diced" into individual chips. Dicing or chopping up a wafer into chips is a relatively intense mechanical procedure. Unless the bond between the chip and the heat sink is very strong, the wafer could not be diced without that bond breaking. In view of the totality of the specification, one skilled in the art would understand that the Applicants' pressure bond would remain fixed after the pressure was removed.

Based on the above, it is respectfully submitted that the amended independent claims fully distinguish over the Bewley "bond" which merely uses a chisel screw to apply pressure and allows the parts to separate when the pressure is removed.

The secondary references cited in the Office Action have been previously discussed and fail to overcome the deficiencies of the primary references in rendering obvious Applicants'

invention. Accordingly, it is respectfully submitted that the amended independent claims define patentable subject matter and allowance thereof, along with the claims depending therefrom is respectfully solicited.

Respectfully submitted,

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